



UNIVERSITY of MARYLAND  
SCHOOL OF SOCIAL WORK

# Facilitating Prevention Science in Education Settings: An Example Using Statewide Linked Longitudinal Data from Maryland's Education System and the Workforce

Angela K. Henneberger, Heath Witzen, & Alison Preston  
University of Maryland

Presented at the Society for Prevention Research  
May 30, 2018

# Acknowledgement

The research reported here was funded in part by the Maryland Longitudinal Data System Center (MLDSC). We are grateful for the data, technical, and research support provided by the MLDSC. The views and opinions expressed are those of the authors and do not necessarily represent the views of the MLDSC or its partner agencies. Any errors are attributable solely to the authors.

# The MLDS Center

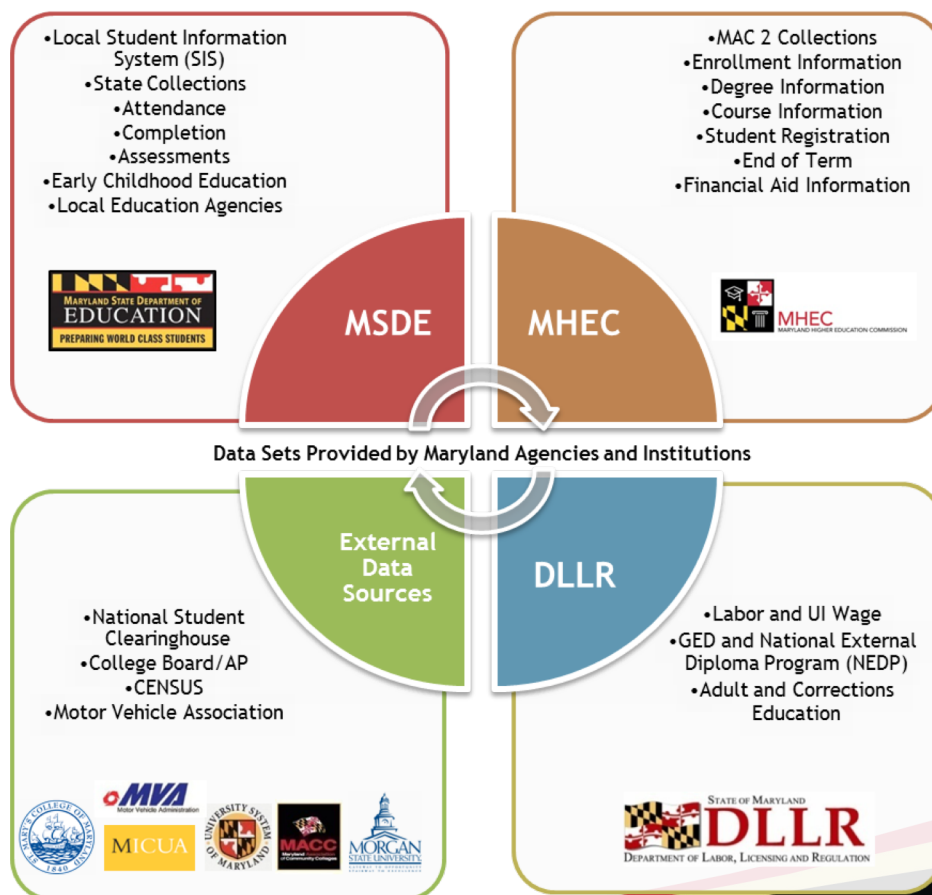
## 12 Member Governing Board



The MLDS Center is an independent unit of State government.

**Purpose:** Generate timely and accurate information about student performance that can be used to improve the State's education system and guide decision makers at all levels.

# The MLDS Data





# Record Linkage

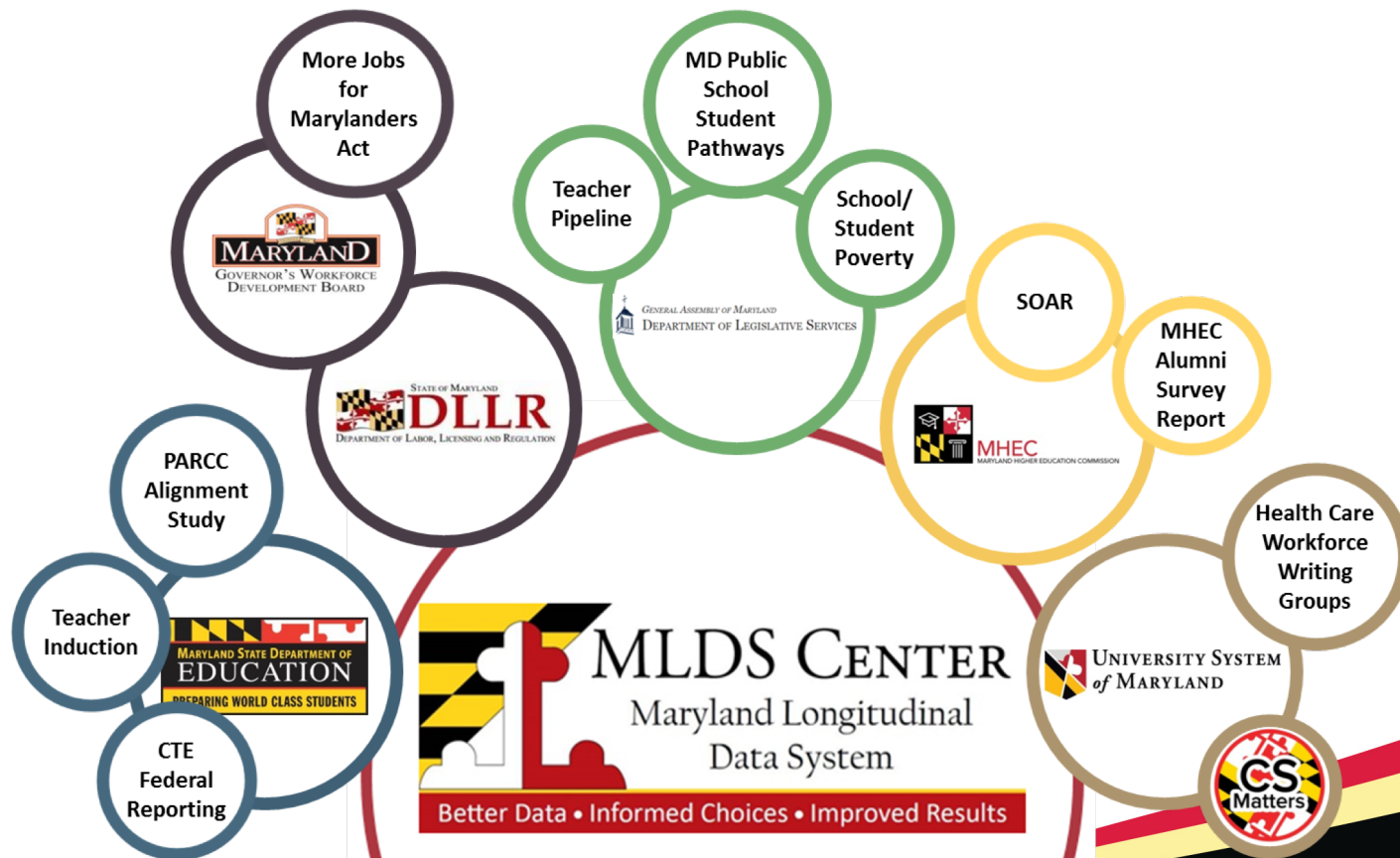
Table 1: Number of individual records in the MLDS by Data Source

Data Source	Count as of 6/29/2016	Count as of 11/16/2017	Percent Change
MSDE	1,673,949	1,980,714	18%
MHEC	1,203,673	1,389,867	15%
DLLR	1,074,724	1,381,175	29%
<b>Net Total</b>	<b>2,559,477</b>	<b>3,029,122</b>	<b>18%</b>

Table 3: Percent of 12<sup>th</sup> Grade Cohorts in the MLDS with one or more cross-sector matches

Academic Year	Total for all 12 <sup>th</sup> Grade Cohorts (8)	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
2017	95%	89%	93%	94%	94%	94%	93%	93%	91%	83%
2016	92%	87%	92%	93%	93%	93%	92%	90%	85%	N/A
2015	88%	87%	91%	91%	90%	89%	87%	82%	88%	N/A
<b>Difference</b>	<b>↑ 3%</b>	<b>↑ 2%</b>	<b>↑ 1%</b>	<b>↑ 1%</b>	<b>↑ 1%</b>	<b>↑ 1%</b>	<b>↑ 1%</b>	<b>↑ 3%</b>	<b>↑ 6%</b>	<b>N/A</b>

# Collaborative Engagement with Stakeholders



# Partnership with the University of Maryland

The MLDS research branch conducts advanced statistical analyses and policy evaluation to provide actionable information for policy and practice.

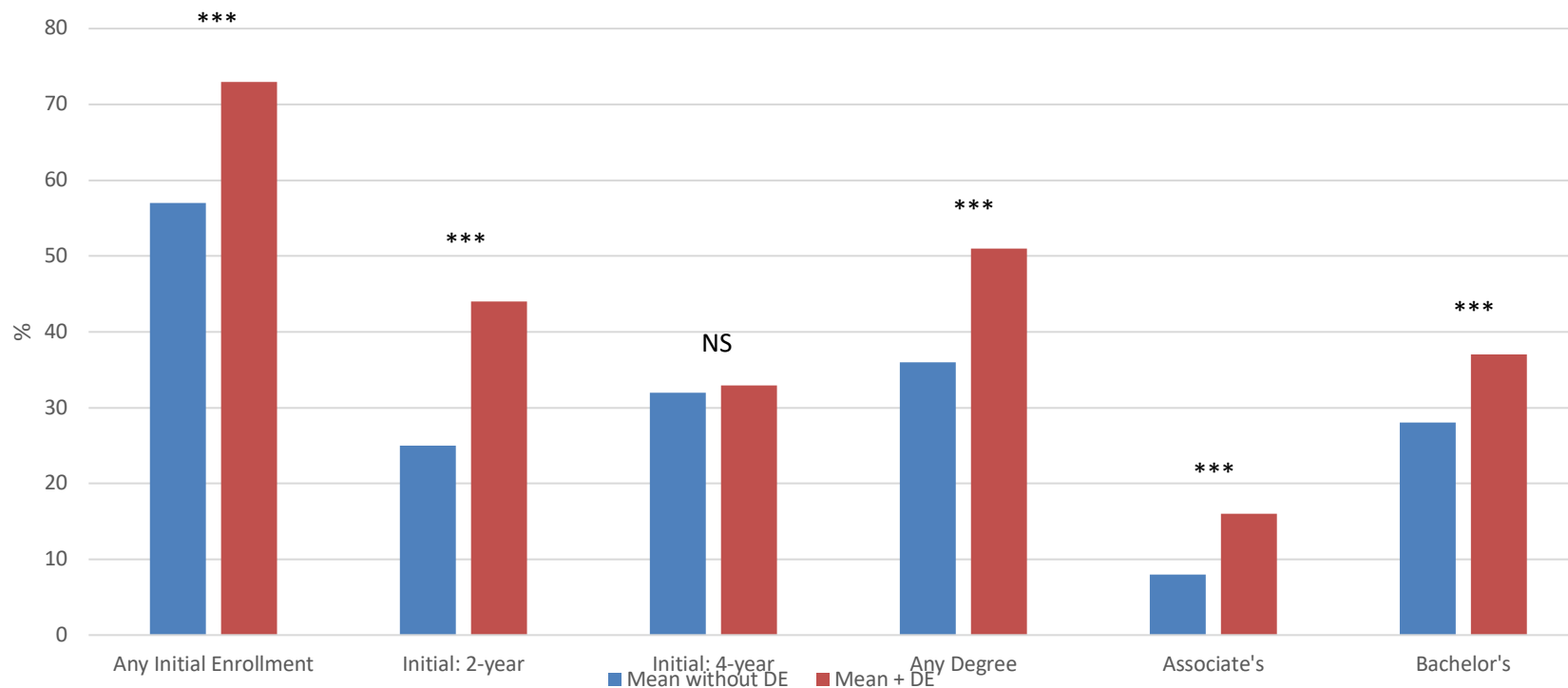


# Maryland's 2013 CCRCCA

- College and Career Readiness and College Completion Act of 2013 (Senate Bill 740)
  - Encourages dual enrollment, where high school students enroll in college courses
  - Special incentives for low-income students
  - Dual enrollment has increased in Maryland in recent years (Henneberger et al., 2016)

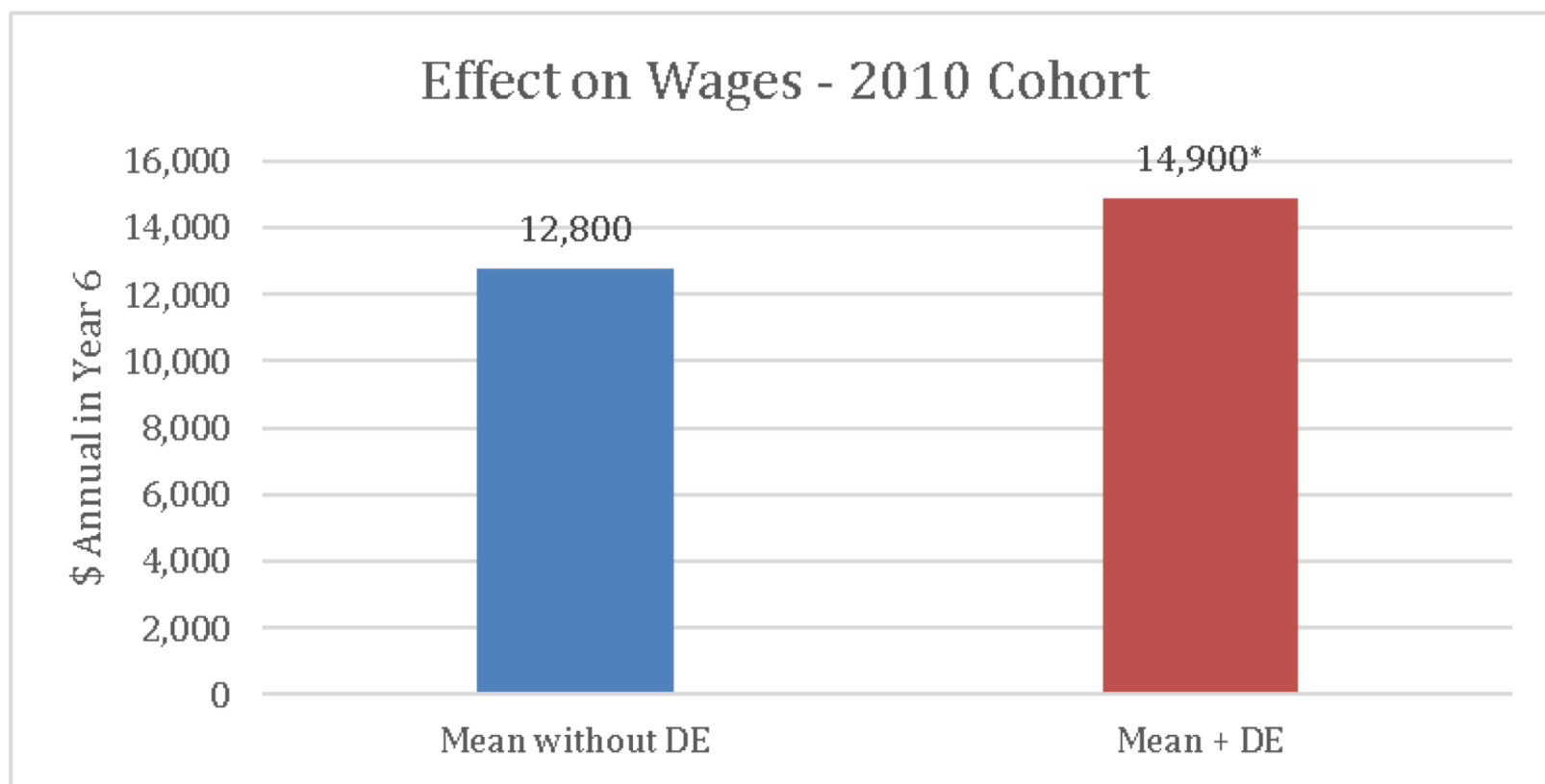
# Causal Evaluation to Inform Policy

Causal Effects of Dual Enrollment: 2010 Cohort



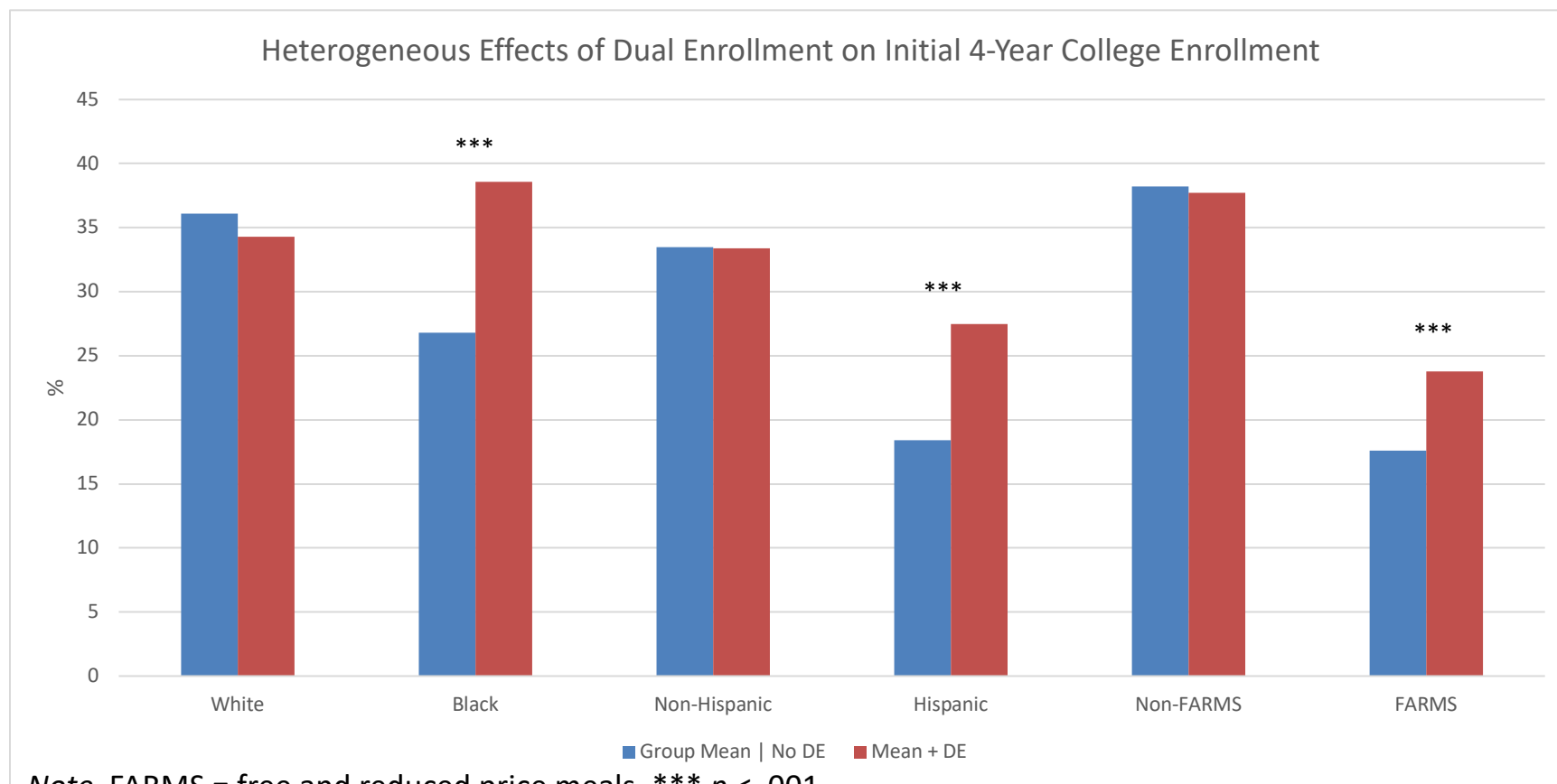
Note. \*\*\*  $p < .001$

# Causal Evaluation to Inform Policy



Note. DE = dual enrollment. \*  $p < .05$

# Heterogeneity of Effects



Note. FARMS = free and reduced price meals. \*\*\*  $p < .001$

# Policy Implications

- Incentivize dual enrollment in high school
- Particularly for under-represented students, who benefit the most
  - Low income
  - Black
  - Hispanic
- Heterogeneity does not seem to transfer to degree earning— provide additional supports for persistence to degree for under-represented students
- Focus on 2-year college enrollment, with the goal of transfer to 4-year



# Dissemination

The screenshot shows the homepage of the Maryland Longitudinal Data System Center. At the top, there is a navigation bar with links to Maryland.gov, Phone Directory, State Agencies, and Online Services. The main header features the Maryland.gov logo, the center's name, and the MLDS Center logo with the tagline 'Better Data • Informed Choices • Improved Results'. Below the header is a large banner image divided into three sections: an elementary school, a historic building, and a modern city skyline. A search bar is positioned below the banner. The main navigation menu includes links to HOME, DASHBOARDS AND REPORTS, SERVING YOU..., CENTER ADMINISTRATION, and ABOUT. On the left side, there is a 'TOPICS' section with links to The Governing Board, Staff, Contact, Agency Partners, Useful Links, and Maryland's Public Information Act. A 'Stay Connected!' box encourages signing up for news and updates. The central content area features a large graphic stating '44% of Maryland public high school graduates enrolled in a Maryland college graduate.' with a 'Click Here' link. Below this is a 'Click Here to view Dashboards' link. On the right, an 'Announcements' section lists several items: a link to the Data and Information Request Form, a report on Bachelor's Degree Graduates Employed as Public School Teachers, a report on Time to Employment for Bachelor's Degree Graduates, a Research Series, and a notice about the next MLDS Governing Board Meeting on Friday, June 8, 2018, from 9:00 a.m. to 12:00 noon at the Nancy S. Grasmick Building.

**TOPICS**

- The Governing Board
- Staff
- Contact
- Agency Partners
- Useful Links
- Maryland's Public Information Act

**Stay Connected!**  
Sign up here to get the latest news and updates in your inbox.

**44%**  
of Maryland public high school graduates enrolled in a Maryland college graduate.

[Click Here](#)

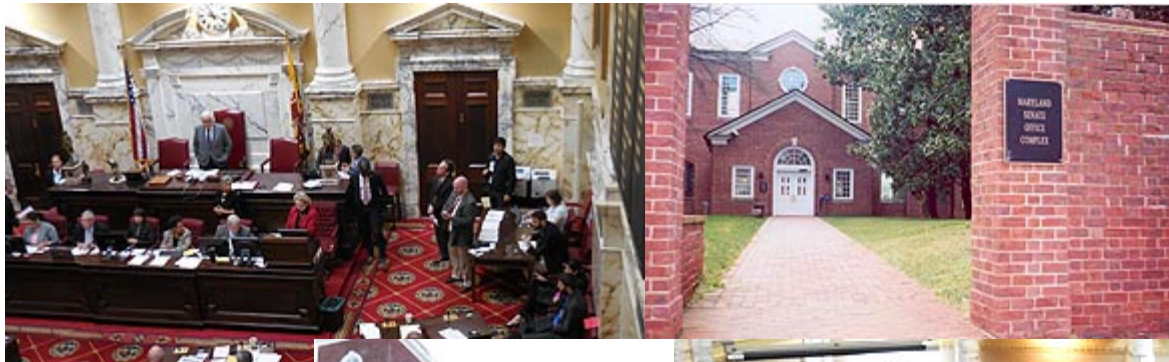
[Click Here to view Dashboards](#)

**Announcements**

- Click here to access Data and Information Request Form
- Bachelor's Degree Graduates Employed as Public School Teachers within 1 Year of Graduation
- Time to Employment for Bachelor's Degree Graduates Employed as Public School Teachers
- Research Series
- The next MLDS Governing Board Meeting will be held Friday, June 8, 2018 from 9:00 a.m.- 12:00 noon at the Nancy S. Grasmick Building, 200 West Baltimore Street, Baltimore, MD 21201, 7th Floor Board Room

<https://mldscenter.maryland.gov/>

# Dissemination: Maryland General Assembly



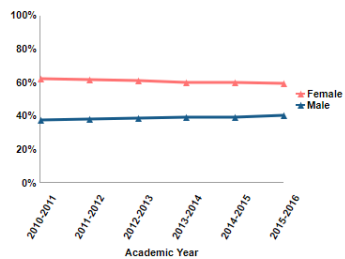
# Dissemination: The Public

## Statewide Trends in Dual Enrollment in Maryland Public High Schools

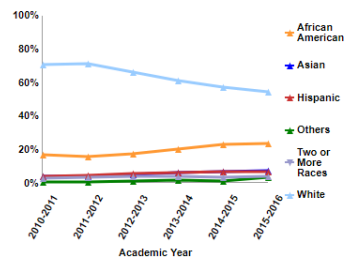
### What do the data show?

On average, dually enrolled public high schools students in Maryland are predominantly female (60%), white (54%), and were not eligible for the Free and Reduced Price Meals (FARMS) program (85%). By comparison, in 2014-15, the average 12th grade Maryland public high school student was male(50%), white (49%), and 66% did not participate in the Free and Reduced Price Meals (FARMS) program (an indicator of socioeconomic status).

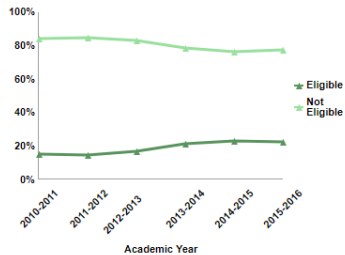
High School Dual Enrollment by Gender



High School Dual Enrollment by Race/Ethnicity



High School Dual Enrollment by FARMS Status



Learn more about dual enrollment in Maryland by reading the [annual report](#).

### How is the percentage calculated?

Review the formula for how each percentage has been calculated.

### For the Future ...

We want to hear from you! What else would you like to know about this population? Help us expand this dashboard by sending suggestions to [mlds.center@maryland.gov](mailto:mlds.center@maryland.gov).

### Data Limitations and Notes:

Review information on the data used in this dashboard.

### Research Agenda:

These data fulfill the reporting requirement under Education Article § 24-703.1, Code of Maryland, to provide the Governor and General Assembly the number of students who are dually enrolled.

The data also inform analysis for the Research Agenda Question: What are the differences in performance, retention and graduation, including time to degree, of students beginning in dual enrollment programs, at 2-year institutions and 4-year institutions?

[View Data Table](#)

[mldscenter.maryland.gov](http://mldscenter.maryland.gov)

Publish Date : 10/25/2016

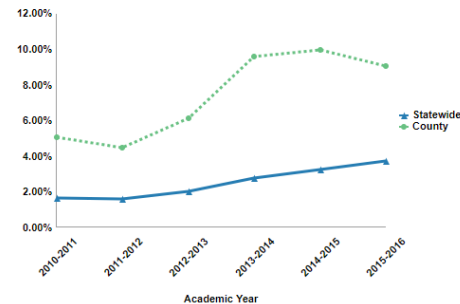
Overview Gender Race and Ethnicity Grade Level

Select a county below to compare dual enrollment rates to statewide rates.

County

## County Trends in Dual Enrollment for Maryland Public High Schools

State-County Comparison of Dual Enrollment Students



### What does this dashboard show?

This series of dashboards provides county-level information on **dually enrolled** Maryland public high school students.

There is wide variation in dual enrollment trends within each Maryland county. County enrollment rates ranged from 2% to 30% in 2014-15.

### Why is this important?

Research suggests students that are dually enrolled may be more likely to enroll in and graduate from college as well as experience higher academic achievement while in college. Monitoring demographic trends for dual enrollment at the county level can help policymakers develop targeted policies that help increase dual enrollment for specific counties. Increasing dual enrollment rates for counties with low participation rates may also help increase college enrollment rates for those counties.

Learn more about dual enrollment in Maryland by reading the [annual report](#).

### How is the percentage calculated?

Review the formula for how each percentage has been calculated.

### For the Future ...

We want to hear from you! What else would you like to know about this population? Help us expand this dashboard by sending suggestions to [mlds.center@maryland.gov](mailto:mlds.center@maryland.gov).

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[View Data Table](#)

[Washington](#)

[mldscenter.maryland.gov](http://mldscenter.maryland.gov)

Publish Date : 10/25/2016

# Dissemination: Research



**MLDS CENTER**  
Maryland Longitudinal  
Data System  
Better Data • Informed Choices • Improved Results

December 2016

Dual Enrollment in Maryland  
A Report to the Maryland General Assembly and Governor Larry Hogan

Submitted by:

Maryland Longitudinal Data System Center  
Ross Goldstein, Executive Director  
Terry V. Shaw, MSW, MPH, Ph.D., Principal Investigator  
Angela K. Henneberger, Ph.D., Director of Research

Authored by:

Angela K. Henneberger, Ph.D., Principal Investigator, Director of Research  
Marie K. Cohen, MSW, MPH  
Stacey L. Shipe, MSW  
Terry V. Shaw, MSW, MPH  
University of Maryland, Baltimore



**MLDS CENTER**  
Maryland Longitudinal  
Data System  
Better Data • Informed Choices • Improved Results

May 2018

Dual Enrollment in Maryland  
What is the Effect on Long-Term College and Career Outcomes?

Submitted by:

Maryland Longitudinal Data System Center  
Ross Goldstein, Executive Director  
Angela K. Henneberger, Ph.D., Principal Investigator, Director of Research

Authored by:

Angela K. Henneberger, Ph.D.<sup>1</sup>  
Heath Witzten, MA<sup>2</sup>  
Alison M. Preston, MA, MS<sup>1</sup>  
<sup>1</sup> University of Maryland, Baltimore  
<sup>2</sup> University of Maryland, College Park



**MLDS CENTER**  
Maryland Longitudinal  
Data System  
Better Data • Informed Choices • Improved Results

Applying Causal Inference Techniques to Strengthen Dual Enrollment Program Evaluation Research in Maryland

Angela K. Henneberger & Heath Witzten

MLDS Center & University of Maryland

Presented at MLDS Center Research Series  
October 5, 2017

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# Dissemination: Academic



## Easing the Transition from High School to College: Using Statewide Longitudinal Data to Evaluate Dual Enrollment Programs

Angela K. Henneberger, Heath Witzen, & Alison Preston

Presented at the Society for Research on Adolescence  
April 13, 2018

This research was funded in part by the Maryland Longitudinal Data System Center (MLDSC). We are grateful for the data, technical, and research support provided by the MLDSC. The views and opinions expressed are those of the author and do not necessarily represent the views of the MLDSC. Any errors are attributable solely to the authors.

Long Term Effects of Dual Enrollment Program Participation I

RUNNING HEAD: Long Term Effects of Dual Enrollment Program Participation

The Effects of Dual Enrollment on Improving Long-term College and Workforce Outcomes:  
Heterogeneous Effects for Under-Represents Students

Angela K. Henneberger, Heath Witzen, & Alison M. Preston  
University of Maryland

Submission: *Education Evaluation and Policy Analysis*



# Dissemination: Synthetic Data



## SLDS Issue Brief Maryland's Synthetic Data Project

The Maryland Longitudinal Data System Center (MLDS Center) is investigating the use of a synthetic data method to increase the amount of rigorous policy research conducted with MLDS data while protecting confidential individual data.

The method would allow policy analysts and researchers to use synthetic data without going through the lengthy approval process required to use confidential data. In addition to increasing access to MLDS data and the data's impact on policy and practice, the project could be a model for states seeking to protect confidential data while encouraging statewide longitudinal data system (SLDS) use for research, training, and evaluation.

Maryland's synthetic data project is the work of the MLDS Center and the Maryland State Department of Education (MSDE) as part of a 2015 SLDS grant awarded by the U.S. Department of Education. The MLDS Center partners with Maryland Higher Education Commission; Maryland Department of Labor, Licensing, and Regulation; MSDE, the University of Maryland, Baltimore; and the University of Maryland, College Park.

### What Are Synthetic Data?

The concept of synthetic data was first proposed by Harvard University Professor Donald Rubin in 2012 in response to the access constraints of sensitive individual-level data.<sup>1</sup> The goal of developing synthetic data is to provide publicly available datasets that can be used for valid research analyses in place of the confidential data.

Producing synthetic data requires identifying variables of interest and creating "gold-standard" files that contain the original confidential information. The gold-standard files serve as the basis for creating and evaluating synthetic datasets. Borrowing from imputation methods, or the process of replacing missing data with substituted values, MLDS Center staff members would construct joint distributions of the original variables. Then, they would randomly select values from the joint distributions to create multiple sets of new, or synthetic, data that mimic the actual data.

The synthetic datasets would then be evaluated to verify that their statistical characteristics were sufficiently similar to those of the original data. Before the synthetic datasets would be released, a disclosure risk assessment would be conducted. That assessment would ensure negligible risk of linking synthetic data records to the students, workers, schools, or employers represented in the gold-standard files.

To help verify results, external researchers completing analyses with synthetic datasets could request that the Center replicate the analysis with actual data. Currently, the Survey of Income and Program Participation (SIPP) synthetic data project of the U.S. Census Bureau provides such an option for external researchers.

### Maryland's Synthetic Data Project

The MLDS Center serves as a central repository of data from all levels of the state's education and workforce programs. Because such data could be linked to individual students, workers, schools, and employers, the Center treats the data as confidential.

This product of the Institute of Education Sciences (IES) SLDS Grant Program was developed with the help of knowledge staff from state education agencies and partner organizations. This information presented does not necessarily represent the opinions of the IES SLDS Grant Program. We thank the following people for their valuable contributions:

Chandra Haislet  
Maryland State Department of Education

Laura Stapleton  
Maryland Longitudinal Data System and the University of Maryland, College Park

Michael Woolley  
Maryland Longitudinal Data System and the University of Maryland, College Park

Xiaoying Zheng  
Maryland Longitudinal Data System and the University of Maryland, College Park

Corey Chaitin  
SLDS Grant Program, State Safety

Carla Howe, Ph.D.  
SLDS Grant Program, State Safety

For more information on the IES SLDS Grant Program or for support with development, please visit <http://nces.ed.gov/ipeds/slds>



MLDS CENTER  
Maryland Longitudinal Data System

## The Synthetic Data Project

Aims: Expand access to the data to leverage research value

Commitment: Assess feasibility to produce synthetic datasets

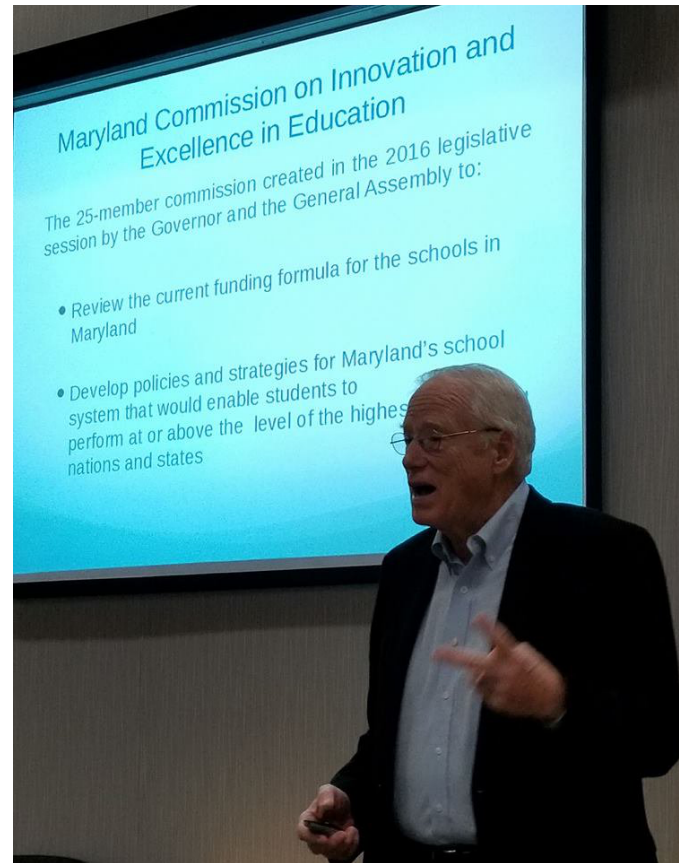
1. Study the data
2. Define 3 Gold Standard Datasets
3. Synthesize Gold Standard Datasets
4. Evaluate research utility and safety
5. Governing Board Approval
  - a. Release
  - b. Allow users to send error free codes to be run on real data
6. Report on the project to inform other state longitudinal data systems

<sup>1</sup> Donald Rubin curriculum vitae, <https://statistics.fas.harvard.edu/files/statistics/files/rubin-a-june-2017.pdf>

# Additional Projects



- Request from Senator Bill Ferguson to examine the relation between student and school-level poverty and long-term outcomes to inform education funding formulas.
- Request from the Kirwan Commission to examine the role of teacher characteristics on student outcomes.



# Contact

Angela K. Henneberger

University of Maryland School of Social Work

Principal Investigator and Director of Research,  
MLDS Center

[ahenneberger@ssw.umaryland.edu](mailto:ahenneberger@ssw.umaryland.edu)